

Amendments to the Specification

Please replace the paragraph beginning on page 7, line 19 to page 8, line 21, with the following paragraph:

-- Referring now particularly to Figs. 2 and 3, the in-feed conveyor 21, comprising upper and lower tape belts 26 and 27, captures the lead edge 28 of the web 11 just as the rotary cutoff knife 18 severs the web to form a sheet 20. The slight overspeed of the belts 26 and 27 with respect to web speed into the knife 18, creates a small gap between the trailing edge 30 of the cut sheet and the lead edge of the web moving into and through the knife, all in a manner well known in the art. The in-feed conveyor 21 carries the closely spaced sheets into the vacuum shingler 22 of the present invention where the sheets are serially captured in a vacuum section 31 and decelerated to the lower speed of the shingling conveyor 24. The vacuum section 31 includes an upstream first vacuum surface 32 that includes an upwardly sloping surface to which a vacuum is applied through a first vacuum slot 33. In the presently preferred embodiment, the first vacuum surface 32 is joined at its downstream edge with the upstream edge of a second vacuum surface 34 that is generally horizontally disposed and to which vacuum is applied via a second vacuum slot 35. Each of the vacuum surfaces 32 and 34 has its own vacuum plenum 36 and 37, respectively, so that vacuum may be applied to each separately. Vacuum through the respective slots 33 and 35 is selectively applied by a vacuum control such as a conventional sliding shuttle valve 38 which may also be controlled to modulate the vacuum force. It has been found that the use of dual vacuum plenums 36 and 37 greatly enhances sheet control and shingle quality. Furthermore, the timing of the application of vacuum to the sheets, as well as the modulation thereof, may be adjusted and controlled to provide optimum shingling for sheets of varying size and basis weight and for different in-feed conveyor speeds. The vertical positioning of the vacuum plenums may also be adjusted within a relatively small range, again based on sheet parameters and line speed. In particular, the use of two independently controlled vacuum plenums permits shingling to be effectively accomplished with a very small vertical displacement of the sheets from the plane of the in-feed conveyor, thereby minimizing the opportunity for sheet misalignment. Finally, effective shingling may be accomplished without the use of snubber wheels over the shingling conveyor but, if the sheet and operating parameters require some additional nipping force, the system of the present

invention includes an air nip to provide a supplemental downward nipping force on the sheet being shingled. --

Please replace the paragraph beginning on page 9, line 10, with the following paragraph:

-- The upstream edge 47 of the first vacuum surface 32 may be vertically positioned, as shown by the double-headed arrow adjacent edge 47 in Fig. 3, below the plane of the in-feed conveyor 21 by a small distance, preferably variable within a range of about 0.5-0.75 inch (about 13-19 mm). The first vacuum surface slopes upwardly from its upstream edge such that it joins the upstream edge 48 of the second vacuum surface 34 at a generally horizontal tangent line. The first vacuum surface 32 may be curved and upwardly convex, as shown in the broken line in Fig. 3, to provide smooth transition of the sheets. The second vacuum surface 34 is preferably disposed horizontally and is vertically adjustable, as shown by the double-headed arrow below surface 34 in Fig 3, within a small range of coplanar with the in-feed conveyor 21 (sometimes referred to as board pass height) to a position about 0.25 inch (about 6 mm) below the plane of the in-feed conveyor. Adjustments of the vertical position of the first and second vacuum surfaces 32 and 34, again, depends on many variables including sheet length, sheet basis weight, in-feed line speed and shingling conveyor speed. --

Please replace the paragraph beginning on page 9, line 23 to page 10, line 16, with the following paragraph:

-- In order to operate at higher line speeds and correspondingly higher shingling speeds, it may be necessary to provide a supplemental nipping force to assist the sheet stopping force applied by the second vacuum plenum 37. This supplemental nipping force is applied downwardly to nip the sheet on the shingling conveyor 24 just as the trailing edge of the sheet leaves the in-feed conveyor and the vacuum controller applies a vacuum to the second vacuum surface 34 to decelerate the sheet. However, because rotary snubber wheels can damage sensitive pre-printed or coated sheet surfaces, an air nip 50, positioned over the

shingling conveyor 24, is used to provide this supplemental nipping force. The air nip 50 comprises a thin slit 51 that extends the full width of the sheets through which compressed air is blown to create a uniform air curtain directed downwardly against the sheet. The air nip nozzle 52 may be adjustable vertically as well as rotationally around a horizontal axis so that the air curtain may be directed either slightly in an upstream direction or a downstream direction, depending on sheet and operating parameters. The air controller may also be operated to modulate the air flow and thus the force of the air nip. In addition, the air nip 50 may be adjustably positioned longitudinally over the shingling conveyor, as shown by the double-headed arrow adjacent the air nip 50 in Fig. 2, to accommodate varying sheet lengths. Of course, if sheet surface quality is not an issue, conventional snubber wheels 59, shown in phantom in Fig. 2, may be used instead. A supplemental nipping force may also be applied by alternate means, including tape belts that are located above the shingle. The belts are adjustable vertically to move down to nip the shingle against the shingling conveyor 24. Such nipping belts may also be positioned to provide a downward nip force on the vacuum section 31, including a modified section utilizing Fig. 6 cam roller. --